



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/090,420      | 02/27/2002  | Shuichi Furuya       | IIDAP25.001AUS      | 6263             |

20995 7590 03/12/2004

Knobbe Martens Olson & Bear LLP  
2040 Main Street  
Fourteenth Floor  
Irvine, CA 92614

|          |
|----------|
| EXAMINER |
|----------|

DINH, Tuan T

|          |              |
|----------|--------------|
| ART UNIT | PAPER NUMBER |
|----------|--------------|

2827

DATE MAILED: 03/12/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

10/090,420

**Applicant(s)**

FURUYA, SHUICHI

**Examiner**

Tuan T Dinh

**Art Unit**

2827

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) 16-25 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 February 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

### DETAILED ACTION

1. Applicant's election of Group I (claims 1-15) in Paper No. 6 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

### *Drawings*

2. Figures 21-24 should be designated by a legend such as **--Prior Art--** because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

### *Specification*

3. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally **limited to a single paragraph** on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

***Claim Objections***

4. Claims 10, 13 objected to because of the following informalities:

Claim 10, line 3, "a base material" should change to –the base material—for proper antecedent basis.

Claim 13, line 5, "a hole" should be change to –the hole—for proper antecedent basis.

Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 4-5, 8-9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 4, it is unclear. The phrase of "on the insulation...substrate" is not understood. Applicant should clarify what is intended by "on the insulation resin layer...substrate."

Regarding claims 5, and 8-9, it is unclear. The phrase of "in the insulation...substrate" is not understood. Applicant should clarify what is intended by "on the insulation resin layer...substrate."

***Claim Rejections - 35 USC § 102***

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

8. Claims 1-3, 6-7, and 10-15, and insofar as in compliance with 35 USC 112, second paragraph of claims 4-5, and 8-9, are rejected under 35 U.S.C. 102(b) as being anticipated by Nakaso et al. (U. S. Patent 5,638,598).

As to claim 1-2, 4-10, and 13, Nakaso et al. discloses a multilayer substrate as shown in figures 5A-5B for a buildup with a via, which multilayer substrate comprises a base material (1) comprising:

an insulation resin layer (1, column 16, lines 41-42) and a copper layer or an extra thin copper foil (2, column 16, line 42) formed on both surfaces of said insulation resin layer, and which multilayer substrate has a predetermined hole (figures 5B-5C) reaching said copper layer (2) formed on said insulation resin layer (1), and on the surface of the copper layer unformed-side of said insulation resin layer,

wherein an electrodeposition layer (3-figures 5D-5E, column 16, lines 42-43) is formed by circular oscillation electroplating on the inside wall surface of said hole and on the both surfaces of said insulation resin layer,

the electrodeposition layer (3) on said inside wall surface of said hole being formed in a thickness greater than the electrodeposition layer formed on said surfaces of said insulation resin layer.

As to claims 3, 7, 11, 14, Nakaso et al. discloses the hole on the insulation resin layer (1) is filled up with the electrodeposition layer (3) formed on the inside wall surface of said hole formed on the insulation resin layer.

As to claims 12 and 15, Nakaso et al discloses the thickness of the copper foil from 1-5um (column 16, line 67, column 17, lines 1-2).

9. Claims 1-3, 10-11, 13-14, and insofar as in compliance with 35 USC 112, second paragraph of claims 4-5, are rejected under 35 U.S.C. 102(e) as being anticipated by Uzoh et al. (U. S. Patent 6,123,825).

As to claim 1-2, 4-5, 10-11, 13, Uzoh et al. discloses a multilayer substrate as shown in figures 1-6 for a buildup with a via, which multilayer substrate comprises a base material (4, column 8, lines 29-30) comprising:

an insulation resin layer (column 8, lines 29-30) and a copper layer or an extra thin copper foil (6, column 8, line 30) formed on either one or both surfaces of said insulation resin layer, and which multilayer substrate has a predetermined hole (16-figure 1B, column 8, line 50) reaching said copper layer formed on said insulation resin layer (4), and on the surface of the copper layer unformed-side of said insulation resin layer,

wherein an electrodeposition layer (30-figure 6) is formed by circular oscillation electroplating on the inside wall surface of said hole (16-figure 6B) and on the predetermined surface of said insulation resin layer (electrodeposition metal film formed on a surface (27-figure 5B) of the insulation layer 4),

the electrodeposition layer (30) on said inside wall surface of said hole being formed in a thickness greater than the electrodeposition layer formed on said surface of said insulation resin layer (see an attached paper of figure 6B).

As to claims 3, 11, 14, Uzoh et al. discloses in figure 6 the hole (16) on the insulation resin layer (4) is filled up with the electrodeposition layer (30) formed on the inside wall surface of said hole formed on the insulation resin layer.

***Claim Rejections - 35 USC § 103***

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 6-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Uzoh et al. ('825) in view of Nakaso et al. (U. S. Patent 5,638,598).

As to claims 6-9, Uzoh et al discloses all of the limitations of the claimed invention, except for the electrodeposition layer formed on both surfaces of said insulation resin layer.

Nakaso et al. shows a multilayer substrate in figures 5A-5E having a electrodeposition layer (electroconductive substance 3) formed on both side surfaces of an insulating layer (2).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to employ an electrodeposition layer formed on both surfaces of an insulation resin layer in the multilayer substrate of Uzoh et al, as taught by Nakaso et al, for the purpose of achieving an excellent electrically connection of a wiring board.

As to claims 12 and 15, Uzoh does not disclose the extra thin copper foil on one surface of the insulation resin layer has a thickness of 1 to 5  $\mu\text{m}$ .

Nakaso et al. shows a copper foil in the thickness of 1-5 $\mu\text{m}$  formed on the insulating layer (1).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize a copper foil having the thickness of 1-5 $\mu\text{m}$  in the substrate of Uzoh et al, as taught by Nakaso et al. in order to minimize a contacting to the electrodeposition layer.



Art Unit: 2827

***Conclusion***

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Avanzino et al., Matsuda et al., and Kikuchi et al disclose related art.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tuan T Dinh whose telephone number is 571-272-1929. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kammie Cuneo can be reached on 571-272-1957. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Tuan Dinh  
February 20, 2004.

  
**EVAN PERT**  
**PRIMARY EXAMINER**